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ABSTRACT

This study evaluated the reliability and construct validity of scores from the "Children's Role Inventory" (A. Potter and D. Williams, 1991). The measure specifies four roles fulfilled by children: Hero, Lost Child, Mascot, and Scapegoat. Theory and some research also suggest that adults continue to interact based on role assignments adopted in childhood. Both confirmatory and explanatory factor analyses and analyses of variance were conducted for a sample of 499 college students, primarily nonminority members. In the aggregate, analyses suggest that the four roles have reasonable construct validity, but some variations in the measurement of the roles may ultimately be specified to refine this model. The instrument may be useful in assessment and research applications, although further study is warranted. Appendixes present score reliability item analysis statistics and a variance/covariance matrix for Children's Role Inventory items and item parcels. (Contains 5 tables and 29 references.) (SLD)

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PERCEIVED AFFILIATION WITH FAMILY MEMBER ROLES: VALIDITY AND RELIABILITY OF SCORES ON THE *CHILDREN'S ROLE INVENTORY*

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ABSTRACT

The present study evaluated the reliability and construct validity of scores from the *Children's Role Inventory* (Potter & Williams, 1991). The measure specifies four roles fulfilled by children: Hero, Lost Child, Mascot and Scapegoat. Theory and some research also suggest that adults continue to interact based on role assignments adopted in childhood. Both confirmatory and exploratory factor analyses and analyses of variance were conducted for a sample of 499 participants.

Researchers, educators and psychologists have increasingly focused on specific behaviors or roles characteristic of members of dysfunctional family systems. Theories of family role development have arisen from the self help movement, and specifically from research and clinical literature on adult children of alcoholics. For example, Black (1981) and Wegscheider (1981) suggested that as a result of experiencing parental inconsistencies, double-bind messages, hidden feelings, incomplete information, shame, uncertainty, and mistrust, children of alcoholics develop rigid role behaviors which lead to difficulties later in life. Four behavioral patterns have been proposed.

These four roles have been labeled the Hero, the Lost Child, the Mascot, and the Scapegoat (Black, 1981; Wegscheider, 1981). The *Hero* role is played by individuals who attempt to appease other family members, act in ways that look good and bring accolades to the family, or they focus on helping family members with their difficulties. They tend to have enmeshed personal boundaries with other family members, especially their parents; they are believed to often be first-born children, or perhaps more likely still, first-born females (cf. Fischer & Wampler, 1994).

The Missing or *Lost Child* role is defined primarily by avoidance of personal interaction with other family members. The *Mascot*, on the other hand, expresses the repressed emotion of other family members, often by being the family or class clown. Both the Lost Child and the Mascot roles are characterized by these individuals emotionally disengaging from their families, albeit in different ways. Lastly, the *Scapegoat* opposes familial values and

opinions, acting directly against the accepted norms of the family, and opposing the parents' emotional expectations.

It has been suggested that as familial interactions become more dysfunctional, these roles become more rigid and less permeable (Buelow, Bass & Ackerman, 1994). Individuals in dysfunctional families, such as families with parents who are chemically addicted or alcoholic, may incorporate their familial roles into their personal identities more than individuals from less dysfunctional families.

In dysfunctional families, such as those with alcoholic members, roles are developed and adhered to by individuals as a coping strategy (Nardi, 1981). Certain behaviors are formed that manage the problematic situations encountered in these types of families, and these behaviors are repeated until they become seen as duties to be fulfilled by particular individuals. These rigid role behaviors at first facilitate coping, but appear to create subsequent personal and interpersonal difficulties later in life.

But behavioral roles are not limited to alcohol and chemically dependent families, and have been found in other family systems. For example, role rigidly has been described as one predictable result of children experiencing the divorce of their parents. Similarly, siblings of children with disabilities have also exhibited rigid role behavior (Atkins, 1991).

However, empirical studies examining the characteristics of the theorized family roles have only recently begun to appear in the literature, despite widespread acceptance of the validity of the roles constructs in research and clinical thinking (cf.

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Corazzini, Williams & Harris, 1987; Crawford & Phyfer, 1989; Fisher, 1989; Harris & MacQuiddy, 1991).

Potter and Williams (1991) designed a paper-and-pencil measure, the *Children's Role Inventory*, to assess family roles and computed convergent and divergent validity coefficients for the role scales. The present study evaluated whether the four described roles delineate a factor structure that a typical college student population uses when characterizing interactions within their own families. We were also interested in whether there were gender differences in scores on the four scales, since some research (Devine & Braithwaite, 1993; Fischer & Wampler, 1994) suggests that some roles (e.g., Hero) are somewhat more likely to be adopted by a given gender (in this case, females).

If such a broad population creates the expected four-factor structure, this would raise the possibility that the four factors may be useful in characterizing a range of family interactions and dynamics. For example, intraindividual role rigidity might be computed, using scores on these factors, by computing the intraindividual standard deviation of scores on the four scales about a given individual's intraindividual role mean.

Method

Participants

The participants in the present study were 499 college students enrolled in a large university; our sample size was larger than those in previous related studies. The mean age of the participants was 23.33 (SD=6.73). The sample consisted primarily of non-minority participants, but included 53 African-Americans, 28

Hispanics, 7 Native-Americans, and 4 Asian-Americans. There were more females (69.3%) than males (29.9%) in the sample, which included roughly 100 representatives from among each of the four undergraduate classifications and the graduate classification.

Instrumentation

All the participants completed the Children's Role Inventory (Potter & Williams, 1991), which is a self-report measure of affiliation with the four family roles. The instrument consists of 60 items, 15 per scale.

Because score reliability is critical to substantive interpretation, and is a characteristic of a given set of scores, and not of tests per se (cf. Thompson, 1994; Vacha-Haase, 1997), we first computed reliability coefficients for our own data. The four Cronbach's alpha values were: *Lost Child*, .91; *Scapegoat*, .88; *Mascot*, .88; and *Hero*, .87.

As Gorsuch (1983, p. 350) has noted, "A prime use of factor analysis has been in the development of both the operational constructs for an area and the operational representatives for the theoretical constructs." Thus, we were interested in determining whether the four factor structure fit the responses of our large sample on the CRI items.

As Hetzel (1996) makes clear, there are two basic factor analytic methods: confirmatory factor analysis (CFA) and exploratory factor analysis (EFA), although hybrids of these methods have also been conceptualized (Thompson, 1992). In general, confirmatory methods are more rigorous tests of theory, since the fit of theoretical models to data is directly tested in this

application.

The present study employed LISREL (Jöreskog & Sörbom, 1989) to evaluate the CFA fit of six substantive models to the CRI data. Model #1 posited the existence one General factor. Model #2 posited that the Hero and Scapegoat, and the Mascot and Lost Child scales, respectively, would collapse into two uncorrelated factors; this model was tested based on previous findings (Potter, 1988) that Hero scores were highly negatively correlated with Scapegoat scores (r = -.47) and that Mascot scores were negatively correlated with Lost Child scores (r = -.69). Model #3 was the same as Model #2, except that the two factors were allowed to be correlated.

Model #4 posited the existence of four uncorrelated factors (Hero, Mascot, Lost Child, Scapegoat). Model #5 was the same as Model #4, except that the four factors were allowed to be correlated. Model #6 posited the existence of these four uncorrelated first-order factors, and two uncorrelated second-order factors (Hero/Scapegoat and Mascot/Lost Child).

In the present study item "testlets" or item "parcels" (e.g., Cattell, 1956; Cattell & Burdsal, 1975; Gorsuch, 1983, pp. 294-295) were also created by adding the scores on subsets of the 60 CRI items to create 16 score aggregates that could then themselves be subjected to confirmatory factor analysis. Doing this improves parsimony by reducing the number of measured variables, creates more reliable scores for the measured variables, and greatly reduces the number of possible covariances among measurement error sources, and thus is desirable practice (cf. Thompson & Melancon, 1996).

Table 1 presents the fit statistics for these various model tests (see Fan, Thompson & Wang, in press). In CFA it is usually desirable to consult multiple fit statistics to evaluate model integrity (Thompson & Daniel, 1996). Tables 2 through 4 present the parameter estimates associated with Models #5 for both the 60 items and the 16 item "parcels", and with Model #6.

INSERT TABLES 1 THROUGH 4 ABOUT HERE.

The Table 1 fit statistics do not conclusively indicate acceptable model fit for any of the six models. However, the root mean square error of approximation (RMSEA = .005) and the noncentrality ratio (2.67) for Model #5 for 60 items had or approached reasonable levels (<.05 and <2.0, respectively). And the RMSEA (.006) and the goodness-of-fit index (GFI = .908) for Model #5 for the 16 item "parcels" also had or approached reasonable levels (<.05 and >.90 or .95, respectively).

Given the inconclusive results for the confirmatory tests, the data were then subjected to exploratory factor analysis. Based on application of Cattell's scree test, four principal components were extracted (Thompson & Daniel, 1996). Hetzel (1996) offered some very important comments on how replicability and rotation issues interface:

> Some researchers have argued that, all things being equal, orthogonal solutions are desirable. Since the factor pattern and the factor structure matrices are [in this case] identical, and the factor correlation matrix is an identity matrix, fewer parameter

> matrices are estimated. In theory, the resulting parsimony should lead to more replicable results. (p. 194)

Therefore, the factors were rotated to the varimax criterion. Table 5 presents the varimax-rotated factor pattern/structure matrix.

INSERT TABLE 5 ABOUT HERE.

To examine gender differences, four one-way ANOVAs were conducted across gender using factor scores from the factor analysis as the dependent variables. Because statistical significance provides limited information about either result importance or result replicability (Thompson, 1996, 1997a, in press), we also computed effect sizes for all four tests. These tests of gender differences yielded the following results: *Lost Child*, eta^2=3.5% (p=.001); *Scapegoat*, eta^2=5.4% (p=.001); *Mascot*, eta^2=0.3% (p=.230); *Hero*, eta^2=0.1% (p=.418).

Discussion

The confirmatory results presented in Table 1 do not conclusively establish the fit of any of the six tested models to the data, even when item "parcels" were used. However, somewhat better fit was detected for Model #5, the model that most closely matches the scoring keys of the instrument. On the other hand, both the reliability analyses and the exploratory factor analysis results presented in Table 5 suggest that CRI scores have reasonable reliability and validity.

In the aggregate, these results suggest to us that the four roles have reasonable construct validity, but that some variations

in the measurement of the roles may ultimately be specified to refine this model and generate improved fit statistics. Unfortunately, our examination of model modification statistics did not clearly suggest model improvements. We believe that these revisions must await further research and subsequent improvement in the elaboration of relevant theory.

We did find gender differences across the roles, but not the one we most expected (i.e., differences in perceived affiliation with the Hero role). Instead, differences occurred primarily on the Scapegoat and Lost Child roles. The effect sizes associated with these differences might be characterized as low-to-moderate in magnitude (cf. Cohen, 1988).

Our results suggest that the four roles do delineate a meaningful factor space which participants representing diverse family backgrounds, and not exclusively dysfunctional ones, can use to characterize family dynamics. Thus, the CRI may be useful in assessment and research applications, but further research with the measure remains warranted.

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Table 1
Confirmatory Fit Statistics for the Five Models (n=499)

Statistic	Model #1	#2	#3	#4	#5	#6	#1	#5
v	60	60	60	60	60	60	16	16
Null chi sq	16114.33	16114.33	16114.33	16114.33	16114.33	16114.33	5589.11	5589.11
Null df	1770	1770	1770	1770	1770	1770	120	120
Noncentrality	14344.33	14344.33	14344.33	14344.33	14344.33	14344.33	5469.11	5469.11
Model chi sq	10729.31	7444.41	7442.47	6731.81	6253.56	6279.94	3198.01	413.44
Model df	1710	1710	1709	1710	1704	1708	104	98
Noncentrality	9019.31	5734.41	5733.47	5021.81	4549.56	4571.94	3094.01	315.44
NC / df	5.274450	3.353456	3.354868	2.936730	2.669929	2.676779	29.75009	3.218775
GFI	0.347	0.586	0.586	0.631	0.650	0.649	0.441	0.908
Pars Ratio	0.934426	0.934426	0.933879	0.934426	0.931147	0.933333	0.764705	0.720588
GFI*Pars	0.324245	0.547573	0.547253	0.589622	0.605245	0.605733	0.337235	0.654294
CFI	0.371228	0.600231	0.600297	0.649909	0.682832	0.681271	0.434275	0.942323
Pars Ratio	0.966101	0.966101	0.965536	0.966101	0.962711	0.964971	0.866666	0.816666
CFI*Pars	0.358644	0.579884	0.579608	0.627878	0.657370	0.657408	0.376372	0.769564
RMSR	0.155	0.116	0.116	0.175	0.112	0.105	1.628	0.509
RMSEA	0.010591	0.006733	0.006736	0.005897	0.005361	0.005375	0.059739	0.006463

Note. All models were based on analyses of the variance-covariance matrix, except the second-order factor analysis, which converged only for the analysis of the correlation (i.e., standardized covariance) matrix. Model #1 = 1 factor; #2 = 2 uncorrelated factors (Hero/Scapegoat and Mascot/Lost Child); #3 = 2 correlated factors; #4 = 4 uncorrelated factors (Hero, Mascot, Lost Child, Scapegoat); #5 = 4 correlated factors; #6 = four uncorrelated first-order factors, two uncorrelated second-order factors (Hero/Scapegoat and Mascot/Lost Child).

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Table 2
Model #5 Factor Structure for n=499 Participants, v=60 CRI Items

	Factor							
	HERO		MASCOT		LOSTCHIL		SCAPGOAT	
Var.	Patt.	Stru.	Patt.	Stru.	Patt.	Stru.	Patt.	Stru.
LAMBDA X								
PW1	0.483	0.483	0.000	0.076	0.000	-0.052	0.000	-0.316
PW7	0.302	0.302	0.000	0.048	0.000	-0.033	0.000	-0.198
PW15	0.503	0.503	0.000	0.079	0.000	-0.054	0.000	-0.329
PW19	0.474	0.474	0.000	0.075	0.000	-0.051	0.000	-0.310
PW24	0.421	0.421	0.000	0.066	0.000	-0.045	0.000	-0.276
PW31	0.517	0.517	0.000	0.081	0.000	-0.056	0.000	-0.338
PW34	0.523	0.523	0.000	0.082	0.000	-0.056	0.000	-0.343
PW36	0.531	0.531	0.000	0.084	0.000	-0.057	0.000	-0.348
PW37	0.629	0.629	0.000	0.099	0.000	-0.068	0.000	-0.412
PW40	0.407	0.407	0.000	0.064	0.000	-0.044	0.000	-0.266
PW46	0.464	0.464	0.000	0.073	0.000	-0.050	0.000	-0.304
PW52	0.753	0.753	0.000	0.119	0.000	-0.081	0.000	-0.493
PW53	0.444	0.444	0.000	0.070	0.000	-0.048	0.000	-0.290
PW55	0.534	0.534	0.000	0.084	0.000	-0.058	0.000	-0.350
PW57	0.467	0.467	0.000	0.074	0.000	-0.050	0.000	-0.306
PW4	0.000	0.080	0.507	0.507	0.000	-0.358	0.000	0.027
PW8	0.000	0.093	0.590	0.590	0.000	-0.417	0.000	0.032
PW9	0.000	0.086	0.545	0.545	0.000	-0.385	0.000	0.029
PW10	0.000	0.090	0.569	0.569	0.000	-0.402	0.000	0.031
PW11	0.000	0.106	0.675	0.675	0.000	-0.477	0.000	0.036
PW20	0.000	0.115	0.732	0.732	0.000	-0.517	0.000	0.040
PW21	0.000	0.094	0.594	0.594	0.000	-0.420	0.000	0.032
PW22	0.000	0.066	0.419	0.419	0.000	-0.296	0.000	0.023
PW23	0.000	0.103	0.653	0.653	0.000	-0.461	0.000	0.035
PW26	0.000	0.096	0.608	0.608	0.000	-0.429	0.000	0.033
PW27	0.000	0.066	0.418	0.418	0.000	-0.295	0.000	0.023
PW38	0.000	0.124	0.784	0.784	0.000	-0.554	0.000	0.042
PW42	0.000	0.075	0.473	0.473	0.000	-0.334	0.000	0.026
PW48	0.000	0.106	0.674	0.674	0.000	-0.476	0.000	0.036
PW60	0.000	0.087	0.555	0.555	0.000	-0.392	0.000	0.030
PW16	0.000	-0.059	0.000	-0.389	0.551	0.551	0.000	0.012
PW29	0.000	-0.099	0.000	-0.651	0.922	0.922	0.000	0.020
PW32	0.000	-0.084	0.000	-0.553	0.783	0.783	0.000	0.017
PW33	0.000	-0.095	0.000	-0.625	0.886	0.886	0.000	0.019
PW39	0.000	-0.072	0.000	-0.472	0.668	0.668	0.000	0.015
PW41	0.000	-0.074	0.000	-0.486	0.688	0.688	0.000	0.015
PW43	0.000	-0.100	0.000	-0.656	0.929	0.929	0.000	0.020
PW45	0.000	-0.089	0.000	-0.583	0.825	0.825	0.000	0.018
PW47	0.000	-0.103	0.000	-0.673	0.952	0.952	0.000	0.021
PW49	0.000	-0.065	0.000	-0.426	0.603	0.603	0.000	0.013
PW50	0.000	-0.087	0.000	-0.568	0.805	0.805	0.000	0.017
PW51	0.000	-0.054	0.000	-0.357	0.505	0.505	0.000	0.011
PW54	0.000	-0.086	0.000	-0.563	0.798	0.798	0.000	0.017

PW58	0.000	-0.076	0.000	-0.498	0.705	0.705	0.000	0.015
PW59	0.000	-0.092	0.000	-0.605	0.856	0.856	0.000	0.019
PW2	0.000	-0.411	0.000	0.034	0.000	0.014	0.627	0.627
PW3	0.000	-0.224	0.000	0.018	0.000	0.007	0.343	0.343
PW5	0.000	-0.393	0.000	0.032	0.000	0.013	0.600	0.600
PW6	0.000	-0.243	0.000	0.020	0.000	0.008	0.371	0.371
PW12	0.000	-0.366	0.000	0.030	0.000	0.012	0.558	0.558
PW13	0.000	-0.470	0.000	0.039	0.000	0.016	0.718	0.718
PW14	0.000	-0.305	0.000	0.025	0.000	0.010	0.465	0.465
PW17	0.000	-0.425	0.000	0.035	0.000	0.014	0.648	0.648
PW18	0.000	-0.442	0.000	0.036	0.000	0.015	0.675	0.675
PW25	0.000	-0.311	0.000	0.026	0.000	0.010	0.475	0.475
PW28	0.000	-0.254	0.000	0.021	0.000	0.008	0.389	0.389
PW30	0.000	-0.406	0.000	0.033	0.000	0.013	0.620	0.620
PW35	0.000	-0.444	0.000	0.037	0.000	0.015	0.678	0.678
PW44	0.000	-0.517	0.000	0.043	0.000	0.017	0.790	0.790
PW56	0.000	-0.437	0.000	0.036	0.000	0.014	0.667	0.667

PHI				
HERO	1.000			
MASCOT	0.158	1.000		
LOSTCHIL	-0.108	-0.706	1.000	
SCAPGOAT	-0.655	0.054	0.022	1.000

Note. The largest standard error for a factor pattern coefficient was .057 for PW3 on the Scapegoat factor. The largest standard error for the factor correlations in the PHI matrix was .050 for the Scapegoat-by-Mascot correlation. "Patt." = pattern coefficients; "Stru." = unstandardized structure coefficients (Thompson, 1997b).

Table 3
Model #6 Standardized Solution for Second-Order Factor Analysis

	Factor			
Var.	HERO	MASCOT	LOSTCHIL	SCAPGOAT
LAMBDA Y				
PW1	0.494	0.000	0.000	0.000
PW7	0.415	0.000	0.000	0.000
PW15	0.573	0.000	0.000	0.000
PW19	0.589	0.000	0.000	0.000
PW24	0.576	0.000	0.000	0.000
PW31	0.590	0.000	0.000	0.000
PW34	0.553	0.000	0.000	0.000
PW36	0.515	0.000	0.000	0.000
PW37	0.548	0.000	0.000	0.000
PW40	0.491	0.000	0.000	0.000
PW46	0.610	0.000	0.000	0.000
PW52	0.643	0.000	0.000	0.000
PW53	0.496	0.000	0.000	0.000
PW55	0.592	0.000	0.000	0.000
PW57	0.611	0.000	0.000	0.000
PW4	0.000	0.473	0.000	0.000
PW8	0.000	0.502	0.000	0.000
PW9	0.000	0.572	0.000	0.000
PW10	0.000	0.624	0.000	0.000
PW11	0.000	0.627	0.000	0.000
PW20	0.000	0.785	0.000	0.000
PW21	0.000	0.597	0.000	0.000
PW22	0.000	0.528	0.000	0.000
PW23	0.000	0.720	0.000	0.000
PW26	0.000	0.675	0.000	0.000
PW27	0.000	0.344	0.000	0.000
PW38	0.000	0.672	0.000	0.000
PW42	0.000	0.556	0.000	0.000
PW48	0.000	0.639	0.000	0.000
PW60	0.000	0.555	0.000	0.000
PW16	0.000	0.000	0.472	0.000
PW29	0.000	0.000	0.717	0.000
PW32	0.000	0.000	0.617	0.000
PW33	0.000	0.000	0.690	0.000
PW39	0.000	0.000	0.575	0.000
PW41	0.000	0.000	0.514	0.000
PW43	0.000	0.000	0.716	0.000
PW45	0.000	0.000	0.675	0.000
PW47	0.000	0.000	0.710	0.000
PW49	0.000	0.000	0.589	0.000
PW50	0.000	0.000	0.718	0.000
PW51	0.000	0.000	0.481	0.000
PW54	0.000	0.000	0.668	0.000
PW58	0.000	0.000	0.730	0.000

PW59	0.000	0.000	0.808	0.000
PW2	0.000	0.000	0.000	0.579
PW3	0.000	0.000	0.000	0.272
PW5	0.000	0.000	0.000	0.619
PW6	0.000	0.000	0.000	0.362
PW12	0.000	0.000	0.000	0.534
PW13	0.000	0.000	0.000	0.643
PW14	0.000	0.000	0.000	0.550
PW17	0.000	0.000	0.000	0.655
PW18	0.000	0.000	0.000	0.710
PW25	0.000	0.000	0.000	0.527
PW28	0.000	0.000	0.000	0.533
PW30	0.000	0.000	0.000	0.656
PW35	0.000	0.000	0.000	0.696
PW44	0.000	0.000	0.000	0.693
PW56	0.000	0.000	0.000	0.716

GAMMA

	HEROSCAP	MASCLOST
HERO	0.707	0.000
MASCOT	0.000	0.707
LOSTCHIL	0.000	-0.996
SCAPGOAT	-0.927	0.000

Note. First-order factors were constrained to be uncorrelated. The analysis extracted factors from the correlation (i.e., standardized covariance) matrix.

Table 4
Model #5 Factor Structure
(n=499 Participants, v=16 Item "Parcels")

	Factor							
	HERO		MASCOT		LOSTCHIL		SCAPGOAT	
Var.	Patt.	Stru.	Patt.	Stru.	Patt.	Stru.	Patt.	Stru.
LAMBDA X								
P1_1	1.488	1.488	0.000	0.256	0.000	-0.151	0.000	-0.906
P1_2	2.041	2.041	0.000	0.351	0.000	-0.207	0.000	-1.243
P1_3	2.072	2.072	0.000	0.356	0.000	-0.210	0.000	-1.261
P1_4	1.934	1.934	0.000	0.333	0.000	-0.196	0.000	-1.177
P2_1	0.000	0.370	2.152	2.152	0.000	-1.604	0.000	0.149
P2_2	0.000	0.290	1.686	1.686	0.000	-1.257	0.000	0.116
P2_3	0.000	0.469	2.729	2.729	0.000	-2.034	0.000	0.188
P2_4	0.000	0.374	2.178	2.178	0.000	-1.623	0.000	0.150
P3_1	0.000	-0.280	0.000	-2.061	2.766	2.766	0.000	-0.078
P3_2	0.000	-0.257	0.000	-1.892	2.539	2.539	0.000	-0.072
P3_3	0.000	-0.328	0.000	-2.415	3.239	3.239	0.000	-0.092
P3_4	0.000	-0.291	0.000	-2.140	2.871	2.871	0.000	-0.081
P4_1	0.000	-0.985	0.000	0.112	0.000	-0.046	1.618	1.618
P4_2	0.000	-1.241	0.000	0.141	0.000	-0.058	2.039	2.039
P4_3	0.000	-1.564	0.000	0.177	0.000	-0.073	2.570	2.570
P4_4	0.000	-1.524	0.000	0.173	0.000	-0.071	2.504	2.504
PHI								
HERO		1.000						
MASCOT		0.172		1.000				
LOSTCHIL		-0.101		-0.745		1.000		
SCAPGOAT		-0.609		0.069		-0.028		1.000

Note. The largest standard error for a factor pattern coefficient was .146 for P3_1 on the Lost Child factor. The largest standard error for the factor correlations in the PHI matrix was .049 for the Hero-by-Mascot, Hero-by-Lost Child, Scapegoat-by-Mascot, and Scapegoat-by-Lost Child correlations. "Patt." pattern coefficients; "Stru." = unstandardized structure coefficients.

Table 5
Varimax-Rotated Pattern/Structure Matrix

	Factor			
Var.	I	II	III	IV
PW1	-.34195	-.10722	.12669	.54698
PW7	-.14572	-.09161	.24897	.43042
PW15	.05483	-.30089	-.02980	.49857
PW19	.06399	-.29434	-.01507	.53792
PW24	.00997	-.29056	.27358	.50131
PW31	.02396	-.30685	-.04542	.51961
PW34	.03020	-.20966	.03940	.55307
PW36	.07828	-.17555	-.05092	.54561
PW37	.02306	-.13538	-.09749	.60254
PW40	-.22360	-.12759	.21894	.52111
PW46	.10425	-.34161	.02178	.53277
PW52	.00655	-.14898	-.12115	.68635
PW53	-.26262	-.07255	.18489	.56142
PW55	.05224	-.12492	.05931	.63576
PW57	.00919	-.37095	.06761	.49828
PW4	-.27272	.18042	.42142	-.02224
PW8	-.27942	.09429	.43069	.09108
PW9	-.18993	-.08362	.56469	.18075
PW10	-.36490	-.32373	.56423	.06039
PW11	-.08123	.08680	.75587	-.18302
PW20	-.31666	.05350	.72599	.13368
PW21	-.25984	.10852	.56369	.03140
PW22	-.35084	-.17919	.40926	.27492
PW23	-.10274	.09480	.81916	.00852
PW26	-.08876	.06478	.79509	-.00510
PW27	-.18785	.46106	.30902	-.09882
PW38	-.68229	.10520	.32956	.14267
PW42	-.28658	-.06877	.51489	.07135
PW48	-.68807	.04689	.30691	.14335
PW60	-.23230	.11498	.55007	.02978
PW16	.40202	.39760	-.28116	.05722
PW29	.71685	.01270	-.17372	-.05583
PW32	.58448	.32893	-.21320	.11684
PW33	.64410	.26872	-.25012	.02079
PW39	.64160	-.18955	-.03589	-.12418
PW41	.51024	.14788	-.09173	.06504
PW43	.73833	-.20323	-.16005	.00943
PW45	.69547	-.12201	-.15429	.14485
PW47	.75802	-.19983	-.11177	-.02700
PW49	.61251	.05504	-.11713	.11577
PW50	.69604	.23935	-.19596	.07414
PW51	.52847	-.14648	-.06490	.00661
PW54	.71622	-.17399	-.08392	-.04558
PW58	.67072	.13232	-.29703	-.15664
PW59	.73233	.14408	-.30593	-.09053

PW2	-.06096	.62806	.00248	-.11215
PW3	-.36191	.42473	.07389	.16179
PW5	-.07029	.62326	-.00276	-.19773
PW6	.00664	.41479	.05015	-.04910
PW12	.02637	.55746	.06100	-.13168
PW13	.02936	.63207	-.01754	-.17688
PW14	.02368	.50254	.03199	-.24755
PW17	-.03835	.60201	.02797	-.20651
PW18	-.11253	.66305	.09129	-.27206
PW25	.12980	.56503	-.08640	-.15881
PW28	.10354	.50857	-.02678	-.22961
PW30	.09933	.63506	-.04302	-.26296
PW35	-.01582	.63523	.09533	-.22191
PW44	-.03083	.64272	.00529	-.25118
PW56	-.02820	.65054	.08483	-.27562

Appendix A
Score Reliability Item Analysis Statistics (n=499)

SCALE (HERO)
ITEM-TOTAL STATISTICS

	SCALE MEAN IF ITEM DELETED	SCALE VARIANCE IF ITEM DELETED	CORRECTED ITEM-TOTAL CORRELATION	ALPHA IF ITEM DELETED
PW1	54.1125	56.4871	.4862	.8597
PW7	53.9522	59.4969	.3990	.8633
PW15	54.2207	56.9083	.4991	.8590
PW19	54.5093	57.2083	.5300	.8577
PW24	54.0985	58.1347	.5190	.8587
PW31	54.4051	56.5935	.5249	.8577
PW34	54.3991	56.3760	.4981	.8591
PW36	54.7919	55.6767	.4879	.8600
PW37	54.8780	53.9241	.5323	.8582
PW40	54.1543	57.7814	.4850	.8597
PW46	54.4051	57.4438	.5458	.8573
PW52	55.0323	52.5710	.6049	.8536
PW53	54.2628	57.0993	.4940	.8592
PW55	54.7939	55.8253	.5720	.8553
PW57	54.1406	57.5517	.5364	.8577

SCALE (MASCOT)
ITEM-TOTAL STATISTICS

	SCALE MEAN IF ITEM DELETED	SCALE VARIANCE IF ITEM DELETED	CORRECTED ITEM-TOTAL CORRELATION	ALPHA IF ITEM DELETED
PW4	50.5411	77.2551	.4660	.8812
PW8	50.6328	75.7645	.4893	.8807
PW9	50.2685	77.0955	.5474	.8775
PW10	49.9038	77.2359	.5637	.8769
PW11	50.3878	75.0645	.5813	.8759
PW20	50.2124	74.3787	.7410	.8696
PW21	50.1062	76.2850	.5699	.8765
PW22	49.5972	79.7533	.4803	.8803
PW23	50.1142	75.5785	.6803	.8723
PW26	50.2104	76.4518	.6264	.8745
PW27	51.6067	78.6143	.3356	.8885
PW38	50.2465	73.6181	.6132	.8744
PW42	49.8798	78.5289	.5257	.8785
PW48	50.2745	75.5413	.5791	.8760
PW60	50.2786	77.2779	.5072	.8791

SCALE (LOST CHILD)
ITEM-TOTAL STATISTICS

	SCALE MEAN IF ITEM DELETED	SCALE VARIANCE IF ITEM DELETED	CORRECTED ITEM-TOTAL CORRELATION	ALPHA IF ITEM DELETED
PW16	35.7094	131.1503	.4422	.9132
PW29	35.1924	123.3886	.6724	.9056
PW32	35.4489	125.6214	.6015	.9081
PW33	35.5130	123.8327	.6607	.9060
PW39	34.9238	128.2673	.5540	.9096
PW41	35.0080	127.5461	.4943	.9123
PW43	34.8437	122.8309	.6835	.9052
PW45	34.8136	125.0274	.6471	.9065
PW47	34.7635	122.4058	.6731	.9056
PW49	35.2365	129.8958	.5704	.9091
PW50	35.3307	125.4748	.7001	.9049
PW51	35.2004	131.9397	.4632	.9122
PW54	35.0882	125.7111	.6367	.9069
PW58	35.8457	128.5364	.6762	.9064
PW59	35.7715	125.0561	.7639	.9032

SCALE (SCAPEGOAT)
ITEM-TOTAL STATISTICS

	SCALE MEAN IF ITEM DELETED	SCALE VARIANCE IF ITEM DELETED	CORRECTED ITEM-TOTAL CORRELATION	ALPHA IF ITEM DELETED
PW2	27.9712	73.1825	.5722	.8733
PW3	27.8618	77.0169	.2919	.8888
PW5	28.2157	74.1808	.5897	.8726
PW6	28.1876	77.2540	.3707	.8822
PW12	28.4401	74.7950	.5026	.8765
PW13	28.1856	71.9377	.6193	.8710
PW14	28.9151	76.7621	.5051	.8763
PW17	28.4161	73.9198	.5909	.8725
PW18	28.6205	73.4213	.6559	.8699
PW25	28.6465	76.1399	.5076	.8761
PW28	28.9051	78.2485	.4782	.8777
PW30	28.4662	74.1428	.6090	.8719
PW35	28.4019	73.3799	.6385	.8705
PW44	28.3600	71.5025	.6297	.8704
PW56	28.7087	73.6381	.6545	.8700

Appendix B
Variance/Covariance Matrix for *CRI* Items

n=499
v=60
COVARIANCE MATRIX TO BE ANALYZED

	PW1	PW7	PW15	PW19	PW24	PW31	PW34	PW36	PW37	PW40
PW1	0.9097150									
PW7	0.2435510	0.5034410								
PW15	0.1546060	0.1303250	0.7853540							
PW19	0.1838210	0.1215600	0.3214300	0.6575960						
PW24	0.1601360	0.1403130	0.2539380	0.2269680	0.5208010					
PW31	0.1826420	0.1598660	0.2612700	0.2038740	0.2002280	0.7834460				
PW34	0.2056280	0.1557810	0.2768750	0.2272420	0.2251370	0.3784760	0.8991720			
PW36	0.1818050	0.0765829	0.1823490	0.2560860	0.1887630	0.2455230	0.2284250	1.0898300		
PW37	0.2780460	0.1023290	0.2451490	0.2899530	0.2119180	0.2663000	0.2617690	0.8904680	1.3523400	
PW40	0.4756710	0.2221260	0.1058690	0.1425140	0.1543900	0.1574670	0.1904630	0.1189030	0.2035020	0.6483480
PW46	0.1545300	0.1237210	0.2351650	0.2038740	0.1801470	0.3617600	0.2901220	0.2696200	0.2763400	0.1479890
PW52	0.3366730	0.1656650	0.4215820	0.4217670	0.3108670	0.3800890	0.4266890	0.4665440	0.5978180	0.2493600
PW53	0.4977220	0.2312050	0.1419790	0.1618700	0.1639100	0.1864250	0.1962600	0.1233230	0.2326900	0.4308760
PW55	0.2906090	0.1535800	0.2849110	0.2616840	0.2132580	0.2292420	0.2262110	0.3920530	0.4977340	0.1929240
PW57	0.1397980	0.1568560	0.3214060	0.2280500	0.2259540	0.2820100	0.2569720	0.1799380	0.1914270	0.1767470
PW4	0.1670890	0.0811985	-0.0656977	-0.0331828	-0.0062897	-0.1384090	-0.0440399	-0.1111180	-0.1203730	0.1174130
PW8	0.3150340	0.1394580	-0.1033590	-0.0105334	0.0802136	-0.0464254	0.0489784	-0.0225450	-0.0296785	0.1903920
PW9	0.2050930	0.1577490	0.0380037	0.1011340	0.1222610	0.0296980	0.1384900	0.0622128	0.0383377	0.2081580
PW10	0.2079940	0.1904130	0.0583657	0.0602933	0.1822840	0.0833032	0.0955204	0.0684139	0.0780396	0.2148510
PW11	0.0052170	0.0664088	-0.1165710	-0.1190290	0.0505670	-0.1207640	-0.0996069	-0.1244270	-0.1847040	0.0212185
PW20	0.2650080	0.1584490	-0.0184868	0.0026358	0.1331940	-0.0224505	0.0317865	0.0257865	0.0228207	0.2127530
PW21	0.1409690	0.1016850	-0.0567118	-0.0269656	0.1201120	-0.1012950	-0.0296255	0.0182252	-0.0016740	0.1046490
PW22	0.1915120	0.1407390	0.1233230	0.1074840	0.2177170	0.0884379	0.1449930	0.1120550	0.1260670	0.1572760
PW23	0.0882327	0.1004380	-0.0099154	-0.0487521	0.1016250	-0.0178268	0.0157383	-0.0279193	-0.0444946	0.1103720
PW26	0.0859228	0.0975163	-0.0367120	-0.0270581	0.1227560	-0.0121931	0.0540800	-0.0635810	-0.0623576	0.1281290
PW27	0.0070578	-0.0447419	-0.1928410	-0.1595940	0.0047415	-0.2579710	-0.2395120	-0.1376260	-0.1826650	-0.0146229
PW38	0.3174860	0.1099750	0.0041931	0.0094406	0.0757097	-0.0040563	0.0282976	-0.0292633	0.0049899	0.1889450
PW42	0.1573670	0.1479710	-0.0017022	0.0172192	0.1172630	0.0357100	0.0819189	0.0421888	-0.0264304	0.1632230
PW48	0.2845170	0.1377370	0.0284223	0.0396134	0.1154240	0.0069577	0.0736171	-0.0210904	0.0348367	0.2239170
PW60	0.1145750	0.1009690	0.0046317	-0.0435691	0.0358991	0.0486918	0.0390701	-0.1013920	-0.1381800	0.1240880
PW16	-0.2610000	-0.1552340	-0.0864581	-0.0306517	-0.1573430	-0.0945345	-0.0125311	-0.0213560	-0.0588526	-0.1827090
PW29	-0.3484840	-0.1249730	-0.0054285	-0.0310420	-0.0653476	0.0237785	-0.0439192	0.0603858	-0.0087726	-0.1541590
PW32	-0.2749920	-0.1146910	0.0061126	-0.0133520	-0.0866432	-0.0522290	0.0442693	0.0114727	-0.0718022	-0.2038610
PW33	-0.3454740	-0.1648320	-0.0592752	-0.0069215	-0.0999992	-0.0531585	-0.0004507	-0.0384061	-0.0830416	-0.2248210
PW39	-0.2515070	-0.1012550	0.0262895	0.0461968	-0.0042736	0.0267925	-0.0445308	0.0349414	0.0090502	-0.1480620
PW41	-0.1114600	-0.1023050	-0.0395771	-0.0339675	-0.0738867	-0.0526153	0.0271708	-0.0811020	-0.0158671	-0.0620222
PW43	-0.2542680	-0.1249250	0.1205740	0.1355480	0.0259756	0.0957256	0.0861683	0.1409650	0.1340430	-0.1437300

PW45	-0.1754830	-0.0449453	0.1423770	0.1499790	-0.0020885	0.1511940	0.1434640	0.1478420	0.1836770	-0.0536463
PW47	-0.2811240	-0.1144580	0.0923695	0.1084340	0.0080321	0.0542169	0.0602410	0.1646590	0.1064260	-0.1832930
PW49	-0.2238730	-0.0615528	0.0581766	0.0639914	0.0357864	0.0270300	0.0379112	0.1047840	0.0157544	-0.1378210
PW50	-0.2165130	-0.1354480	-0.0229898	-0.0604744	-0.0659713	-0.0554724	-0.0279595	0.0158993	0.0452431	-0.1585020
PW51	-0.1321440	-0.0679874	0.0634562	0.1399430	0.0406637	0.0510217	-0.0286758	0.1126350	0.0990093	-0.0847406
PW54	-0.2572940	-0.0685950	0.0910375	0.0714602	-0.0218067	0.0129898	0.0028974	0.1281360	0.0539191	-0.1710530
PW58	-0.2900420	-0.1965220	-0.0660196	-0.0837539	-0.1523410	-0.0771825	-0.1208640	0.0014165	-0.0357985	-0.2335240
PW59	-0.3017320	-0.1478340	-0.0556132	-0.0298187	-0.1409770	-0.0450459	-0.0871663	-0.0501606	-0.0829812	-0.2079710
PW2	-0.1206110	-0.0489574	-0.2453820	-0.2273700	-0.1775440	-0.2633260	-0.2300670	-0.2142520	-0.1809280	-0.1229180
PW3	0.1945200	0.0369330	-0.1421040	-0.1056910	-0.0073440	-0.0446360	-0.0080197	0.0147070	-0.0437481	0.0502094
PW5	-0.1417090	-0.0508608	-0.1925900	-0.1549120	-0.2253260	-0.2536920	-0.2932570	-0.2431450	-0.2168760	-0.1281530
PW6	-0.1448840	-0.0946874	-0.1465380	-0.1389000	-0.0461646	-0.1000470	-0.1056450	-0.0625629	-0.0519432	-0.1341690
PW12	-0.0922125	-0.0837820	-0.2377120	-0.1745740	-0.1867310	-0.2278290	-0.1596160	-0.1516570	-0.1929600	-0.0995438
PW13	-0.2556960	-0.0692751	-0.2009080	-0.3453010	-0.1750770	-0.2062560	-0.1656810	-0.3145810	-0.3118200	-0.1906800
PW14	-0.2112980	-0.0823937	-0.2215520	-0.1812900	-0.1384980	-0.1889680	-0.1158860	-0.2065010	-0.1723490	-0.1467170
PW17	-0.1287840	-0.0639753	-0.2355310	-0.2517850	-0.1915120	-0.1790370	-0.1872740	-0.1638260	-0.2151010	-0.1075570
PW18	-0.1733510	-0.0837378	-0.2701350	-0.2551330	-0.2211570	-0.2694750	-0.2644320	-0.2290650	-0.2497970	-0.1365900
PW25	-0.2187390	-0.1108840	-0.2139300	-0.1783490	-0.1738090	-0.2200910	-0.1144900	-0.1275280	-0.1404700	-0.1790530
PW28	-0.1308200	-0.0999107	-0.1881800	-0.1329730	-0.1585620	-0.1898900	-0.2253020	-0.1011300	-0.1102890	-0.0999553
PW30	-0.2219300	-0.1430840	-0.1815050	-0.1861120	-0.2277290	-0.2868830	-0.3450190	-0.2670480	-0.2523710	-0.1867800
PW35	-0.1576990	-0.0507827	-0.1865090	-0.1746810	-0.1602840	-0.2216820	-0.2643410	-0.2674610	-0.2954280	-0.0954391
PW44	-0.2475840	-0.0793394	-0.2719410	-0.3221700	-0.2327870	-0.2773700	-0.2116480	-0.3829830	-0.3711800	-0.1878620
PW56	-0.1791490	-0.0834038	-0.2573820	-0.2297250	-0.1433870	-0.2469070	-0.1991650	-0.2808310	-0.2991360	-0.1561230

	PW46	PW52	PW53	PW55	PW57	PW4	PW8	PW9	PW10	PW11
PW46	0.5866590									
PW52	0.3198490	1.4037800								
PW53	0.1583130	0.3283190	0.7598810							
PW55	0.2171930	0.4369540	0.2378490	0.8167580						
PW57	0.2298010	0.3340700	0.1633390	0.2284450	0.5859590					
PW4	-0.0962407	-0.1650130	0.1572500	-0.0582370	-0.0343458	1.1468100				
PW8	-0.0298792	-0.0563685	0.2020670	0.0100714	-0.0375730	0.4165150	1.3847400			
PW9	0.0457622	0.0860395	0.2282680	0.0654401	0.1097130	0.2722790	0.5273520	0.9096670		
PW10	0.0531827	0.0496052	0.2218410	0.0824138	0.1228680	0.2343080	0.3281160	0.4487970	0.8425850	
PW11	-0.0745791	-0.2176910	-0.0046089	-0.0240701	-0.0452823	0.4277140	0.3123900	0.2643360	0.3631150	1.1775700
PW20	0.0116860	-0.0111629	0.2484410	0.0953916	0.0426918	0.3518560	0.4795550	0.4257270	0.3881260	0.5210170
PW21	-0.0089255	-0.0654200	0.1203170	0.0217785	-0.0341848	0.2941510	0.3573110	0.3470480	0.3489430	0.3486040
PW22	0.0723737	0.1350010	0.2093670	0.1326950	0.1350850	0.1877130	0.2092930	0.2783080	0.3431720	0.1740240
PW23	-0.0097947	-0.0532551	0.1105500	0.0358589	0.0132554	0.2747500	0.3246440	0.3358600	0.3326530	0.6738090
PW26	0.0239515	-0.0679190	0.0957618	0.0120522	0.0243056	0.2909430	0.2481430	0.2779210	0.2998290	0.6656400
PW27	-0.2459230	-0.2741330	-0.0332818	-0.0854189	-0.1626270	0.3073570	0.3963790	0.1325490	0.0477251	0.2935590
PW38	-0.0281527	0.1143330	0.2817320	0.0583456	0.0259394	0.3954090	0.5119450	0.4283830	0.4594570	0.3187990
PW42	0.0357100	-0.0672107	0.1186110	0.0441888	0.0387804	0.2342760	0.2705340	0.2775390	0.3271970	0.2880840
PW48	0.0210139	0.0675528	0.2324890	0.0202775	0.0805346	0.3646570	0.3862450	0.3550920	0.4024430	0.2843240
PW60	0.0025070	-0.0940355	0.1462810	0.0704904	0.0530499	0.3338730	0.2436870	0.2129520	0.2236160	0.5302790
PW16	-0.0704381	0.0438910	-0.2187150	-0.0995606	-0.1590770	-0.1727630	-0.2445780	-0.1473790	-0.5125350	-0.2443070

PW29	0.0257865	-0.0469694	-0.1761230	-0.0127645	-0.0432713	-0.3260660	-0.4588060	-0.3153740	-0.4116550	-0.2451150
PW32	-0.0241165	0.0330702	-0.2095360	0.0121045	-0.0653435	-0.1697650	-0.2733850	-0.2677360	-0.5212750	-0.2371470
PW33	-0.0551666	-0.0684059	-0.2595550	-0.0700316	-0.1115240	-0.2165330	-0.2964070	-0.3331360	-0.5170540	-0.2820970
PW39	0.0468729	-0.0137303	-0.1652100	-0.0356617	-0.0110341	-0.3177240	-0.3715720	-0.1896040	-0.1591250	-0.1706090
PW41	0.0056177	-0.0817820	-0.0599271	-0.0012716	-0.1082930	-0.1228320	-0.0861007	-0.2307630	-0.3763510	-0.2148180
PW43	0.1519500	0.0413276	-0.1799950	0.0725306	0.0647641	-0.4048460	-0.3971110	-0.2544410	-0.3195230	-0.3332770
PW45	0.2415550	0.1558500	-0.0645548	0.1075810	0.1243130	-0.3024760	-0.3180840	-0.1683130	-0.2704850	-0.3268700
PW47	0.1646590	0.0120482	-0.2148590	0.0742972	0.0481928	-0.4477910	-0.4081120	-0.2650600	-0.3373490	-0.3102210
PW49	0.0953031	0.0751583	-0.1505220	0.0435932	0.0740759	-0.2630880	-0.2523290	-0.1238900	-0.2803640	-0.2356070
PW50	-0.0394081	0.0519312	-0.1934910	0.0187765	-0.0617742	-0.2656400	-0.3548610	-0.2714020	-0.4536950	-0.2357400
PW51	0.0168852	0.1318620	-0.1316730	0.0575408	0.0142091	-0.2671530	-0.2199060	-0.0715407	-0.1628840	-0.1709150
PW54	0.0772469	0.1001080	-0.2198410	0.0833072	0.0367925	-0.3891240	-0.3295570	-0.1619100	-0.2300100	-0.2529140
PW58	-0.0751744	-0.0786231	-0.2682800	-0.0509573	-0.1276930	-0.2656200	-0.2997560	-0.2973980	-0.4119480	-0.2519760
PW59	-0.0370138	-0.0520921	-0.2627790	-0.1084100	-0.0830818	-0.2744200	-0.3860810	-0.3083760	-0.5002250	-0.2942530
PW2	-0.2231650	-0.2092820	-0.1247840	-0.1691130	-0.1914830	0.0602691	0.1188180	-0.0665146	-0.1793060	0.0961216
PW3	-0.0767645	-0.0254279	0.1204780	-0.0030071	-0.0869515	0.2292260	0.2238910	0.0958392	0.0237490	0.1590980
PW5	-0.2316040	-0.2669680	-0.1485660	-0.1603450	-0.2074070	0.1482800	0.1065320	-0.0723777	-0.1520430	0.1122670
PW6	-0.1080800	-0.0896653	-0.0812509	-0.1122370	-0.1455360	0.0063420	0.0013082	0.0189858	-0.0629009	0.0423249
PW12	-0.1836520	-0.2074750	-0.0425107	-0.1636850	-0.3128140	0.1030660	0.0794080	-0.0060965	-0.1663850	0.1527510
PW13	-0.1901920	-0.2849760	-0.1194720	-0.2136480	-0.2201470	0.0337824	-0.0468102	-0.1870530	-0.1672620	0.1176500
PW14	-0.1929840	-0.1980510	-0.1387470	-0.1652660	-0.1601110	0.0494845	-0.0298633	-0.0042696	-0.0652792	0.0837666
PW17	-0.2051410	-0.3102350	-0.1216450	-0.1838380	-0.2703960	0.0909852	0.0423887	-0.0849852	-0.1396050	0.1108330
PW18	-0.2915630	-0.3183030	-0.1086430	-0.2033020	-0.2464130	0.2057170	0.1112690	-0.0329052	-0.1172380	0.1465190
PW25	-0.1718980	-0.2190280	-0.2302440	-0.1058340	-0.1720510	-0.0405671	-0.0480910	-0.1034000	-0.2043160	0.0428307
PW28	-0.1637850	-0.1645620	-0.0908967	-0.0819631	-0.1938090	0.0421083	0.0118740	-0.0424946	-0.0971260	0.0376827
PW30	-0.2627870	-0.2648560	-0.2142710	-0.1686460	-0.1841900	0.0917350	-0.0282558	-0.1348400	-0.2173190	0.0560510
PW35	-0.2457780	-0.3262290	-0.1040550	-0.1729870	-0.2183920	0.1945810	-0.0274163	-0.0675773	-0.1192270	0.1632820
PW44	-0.2432330	-0.3933810	-0.1757690	-0.2562960	-0.2309920	0.1504820	-0.0099066	-0.1311740	-0.1701560	0.1045020
PW56	-0.2388750	-0.2748510	-0.1056330	-0.2572530	-0.2787860	0.1911090	0.0714510	-0.0394967	-0.1237330	0.1384460

	PW20	PW21	PW22	PW23	PW26	PW27	PW38	PW42	PW48	PW60
PW20	0.8703590									
PW21	0.5106080	0.9889500								
PW22	0.2907580	0.2591050	0.6270690							
PW23	0.5159350	0.3646090	0.2251970	0.8285570						
PW26	0.4754530	0.3122750	0.1897970	0.6288640	0.8174900					
PW27	0.3216970	0.4100680	0.1056190	0.2811650	0.2548920	1.4336200				
PW38	0.5375810	0.4625800	0.3805880	0.3712490	0.3134260	0.3509630	1.3462100			
PW42	0.3299730	0.3324080	0.2581470	0.2620940	0.2496600	0.1717630	0.3840530	0.7228750		
PW48	0.4277150	0.3516830	0.3342030	0.3083190	0.2638570	0.2771220	0.8217320	0.3518120	1.0956600	
PW60	0.3862020	0.2503560	0.1606220	0.4840690	0.4813880	0.2119370	0.3684360	0.2232820	0.3390400	0.9960560
PW16	-0.2608630	-0.2164210	-0.2219300	-0.2360670	-0.2529400	-0.0622392	-0.3313050	-0.2527950	-0.3076960	-0.2311730
PW29	-0.4358400	-0.3580700	-0.3762830	-0.3052890	-0.2522470	-0.1861190	-0.8942540	-0.3591520	-0.7255880	-0.2895590
PW32	-0.3858280	-0.3590720	-0.2364130	-0.2099580	-0.2137690	-0.1651510	-0.5116340	-0.2818690	-0.5027890	-0.1963040
PW33	-0.4175020	-0.3899450	-0.3209230	-0.3035950	-0.2814580	-0.1407530	-0.6760190	-0.3544160	-0.6830330	-0.3185730
PW39	-0.2830000	-0.1635280	-0.2002320	-0.1527670	-0.1722360	-0.3222360	-0.6438940	-0.1693190	-0.5319350	-0.3076800

PW41	-0.2511530	-0.1930040	-0.1907950	-0.1266950	-0.1502600	-0.1916520	-0.4382140	-0.2298980	-0.4511110	-0.1910490
PW43	-0.4708170	-0.4462220	-0.2647750	-0.3063030	-0.2839090	-0.4276440	-0.8651200	-0.2493180	-0.7408670	-0.4138800
PW45	-0.3562590	-0.3348620	-0.2711570	-0.2890800	-0.2597730	-0.3780580	-0.7515430	-0.3034140	-0.5963250	-0.3455220
PW47	-0.4036140	-0.3152610	-0.3152610	-0.3152610	-0.2630520	-0.3789760	-0.9698800	-0.2389560	-0.8433730	-0.3775100
PW49	-0.2097490	-0.2357200	-0.1772300	-0.1672300	-0.1385180	-0.1275050	-0.4086240	-0.1765980	-0.4138880	-0.2551450
PW50	-0.3359010	-0.3076720	-0.2834710	-0.2098170	-0.1962080	-0.0960861	-0.5580720	-0.2834020	-0.5840560	-0.2730800
PW51	-0.2337240	-0.1611250	-0.1531620	-0.1304980	-0.1404780	-0.1894400	-0.3550640	-0.1483410	-0.3633290	-0.3008270
PW54	-0.3645400	-0.2295880	-0.2306700	-0.2080990	-0.2434060	-0.2719060	-0.7290360	-0.2221870	-0.6437860	-0.3338440
PW58	-0.3650670	-0.2760020	-0.3686330	-0.2545730	-0.2564690	-0.1284490	-0.6068280	-0.2854710	-0.6272100	-0.2480220
PW59	-0.4725840	-0.3653050	-0.3572000	-0.2830400	-0.3038930	-0.1926180	-0.6957490	-0.3233250	-0.6196690	-0.3164880
PW2	0.0330621	0.1106030	-0.1196290	0.0823213	0.0642289	0.3613660	0.0614603	0.0059396	0.0227161	0.0949208
PW3	0.2607310	0.3157650	0.1000170	0.1787440	0.1330430	0.3878140	0.4848110	0.1569810	0.3125960	0.2643970
PW5	0.0228731	0.0702087	-0.1437570	0.0660679	0.0384665	0.3736100	0.0569814	-0.0472511	0.0073480	0.0765628
PW6	0.0403699	0.2031940	-0.0833152	0.0828122	0.0759873	0.2891980	0.0332673	-0.0089858	-0.0497139	-0.0024748
PW12	0.0214525	0.0565307	-0.1112300	0.0766915	0.0736413	0.2167160	0.0298267	-0.0120080	0.0060120	0.1064540
PW13	-0.0553396	0.0289575	-0.1561640	0.0391144	0.0485469	0.3102040	-0.0382774	-0.0892991	-0.0187926	0.0766473
PW14	-0.0182896	0.0251668	-0.0670176	0.0455288	0.0549332	0.1947110	0.0300963	-0.0580921	0.0150180	0.0111428
PW17	0.0034607	0.0420037	-0.0677419	0.0804299	0.0596172	0.2931040	0.0206880	0.0282493	0.0196377	0.0418628
PW18	0.1071940	0.1534350	-0.0608888	0.1199390	0.0553275	0.4480760	0.1274840	0.0274284	0.0805265	0.1220110
PW25	-0.0903494	-0.0553919	-0.1761070	0.0213439	-0.0417622	0.1854810	-0.0910294	-0.0650458	-0.0684381	-0.0109939
PW28	-0.0289656	-0.0046478	-0.1079670	-0.0243660	-0.0260441	0.2230540	-0.0324464	-0.0680920	-0.0633073	-0.0269817
PW30	-0.0334942	0.0524733	-0.1742690	0.0082478	-0.0254700	0.3657790	-0.0401071	-0.1205460	-0.1108000	0.0095773
PW35	0.0483875	0.0753867	-0.0556211	0.0597096	0.0784112	0.3745560	0.0658963	0.0403542	0.0813074	0.0716616
PW44	-0.0559231	0.0409051	-0.1416370	0.0516696	0.0744179	0.4274930	0.0535811	-0.0438145	0.0581243	0.1247520
PW56	0.0252392	0.0768485	-0.1406950	0.0787881	0.1100960	0.4030340	0.0565750	-0.0211185	0.0633637	0.0783897

	PW16	PW29	PW32	PW33	PW39	PW41	PW43	PW45	PW47	PW49
PW16	1.3484700									
PW29	0.4389140	1.6550700								
PW32	0.8423800	0.7115070	1.5976000							
PW33	0.6209570	0.7321430	0.9993400	1.6339100						
PW39	0.2094950	0.6620310	0.4059650	0.4619280	1.3597900					
PW41	0.4389580	0.5254610	0.7598090	0.9067490	0.3261870	1.7874900				
PW43	0.3336630	0.9153530	0.5252710	0.6546590	0.7160390	0.6329730	1.6963700			
PW45	0.3179770	0.8298770	0.5218190	0.6390810	0.6706670	0.5158390	0.9939680	1.5015000		
PW47	0.2630520	0.9718880	0.4779120	0.6104420	0.7951810	0.4979920	1.2590400	1.0040200	1.8112400	
PW49	0.3830710	0.5317060	0.5025150	0.4922050	0.4180010	0.3620490	0.5242610	0.5063780	0.6325300	1.0489700
PW50	0.5166920	0.7080990	0.7350200	0.8873330	0.4410230	0.7445980	0.6371780	0.6080760	0.6586350	0.6569400
PW51	0.2505940	0.4106610	0.2943560	0.3586530	0.5864460	0.2604450	0.4930220	0.4258600	0.4839360	0.3050160
PW54	0.2866780	0.7339860	0.4537550	0.5051830	0.6727470	0.3943630	0.8936020	0.7246660	1.0743000	0.4987610
PW58	0.3819650	0.6333670	0.5520080	0.7093790	0.4345920	0.5160160	0.5817540	0.4918590	0.5983940	0.3727090
PW59	0.5968200	0.8037840	0.7394750	0.8192810	0.5167850	0.5823740	0.7061830	0.6160630	0.6947790	0.4721050
PW2	0.1929080	-0.0813313	0.1241040	0.1066870	-0.1640230	0.0952467	-0.1804050	-0.1647110	-0.1506020	-0.0260360
PW3	-0.1013570	-0.4302640	-0.1433170	-0.1757920	-0.4339590	-0.2482540	-0.5985050	-0.4102230	-0.5224500	-0.1271640
PW5	0.1700190	-0.0639029	0.0967638	0.1198620	-0.1430570	0.0112554	-0.2241390	-0.1669440	-0.1807230	-0.0435047
PW6	0.0881764	-0.0819671	0.0859108	0.1047880	-0.0702771	-0.0099838	-0.0773072	-0.1193510	-0.0401606	0.0420801

PW12	0.2705410	-0.0217986	0.1956360	0.1300150	-0.0526072	0.0024547	-0.1397570	-0.0235934	-0.1084340	-0.0153319
PW13	0.2045340	0.1518260	0.2639940	0.2227590	-0.0398347	0.0828766	-0.1132910	-0.0429453	-0.1064260	0.0530700
PW14	0.2139620	0.0753113	0.1285020	0.1026430	0.0196900	-0.0295611	-0.1056170	-0.0534603	-0.1164660	0.0166196
PW17	0.2049800	0.0327120	0.1077340	0.0838182	-0.0668164	-0.0318146	-0.1297940	-0.1488920	-0.1184740	-0.0641765
PW18	0.1558220	-0.0591424	0.0737821	0.0467723	-0.1558780	-0.0417300	-0.2787420	-0.1892740	-0.2670680	-0.0927719
PW25	0.3560290	0.0501445	0.2928390	0.2561230	0.0186518	0.1225700	-0.0238066	0.0162453	0.0160643	0.1157660
PW28	0.1592020	0.1478900	0.1474310	0.1382810	0.0132675	0.0532149	0.0056297	-0.0188208	-0.0160643	0.0233761
PW30	0.2578590	0.1336560	0.2198460	0.2549580	-0.0488469	0.1426090	-0.0535801	-0.0329353	-0.0120482	0.0486485
PW35	0.1620460	0.0087631	0.1233600	0.1223400	-0.0182616	0.0158232	-0.1325750	-0.1762950	-0.1324300	-0.0435254
PW44	0.2079620	0.0026076	0.2225740	0.2002560	-0.1722600	0.1345420	-0.1533990	-0.1561150	-0.1586350	-0.0275450
PW56	0.1867070	-0.0367925	0.0774843	0.0930013	-0.0696413	-0.0151387	-0.1472700	-0.1274360	-0.1686750	-0.0361647

	PW50	PW51	PW54	PW58	PW59	PW2	PW3	PW5	PW6	PW12
PW50	1.2500000									
PW51	0.3762340	1.1099600								
PW54	0.5424180	0.5868000	1.4365600							
PW58	0.5717820	0.3375260	0.5154410	0.9309860						
PW59	0.6842000	0.4362500	0.6740990	0.7001430	1.1204200					
PW2	0.1235850	-0.1758780	-0.1514230	0.0615206	0.0299515	1.1737500				
PW3	-0.1559740	-0.3585510	-0.5427230	-0.2378860	-0.3056960	0.4104070	1.5554500			
PW5	0.0529211	-0.1242690	-0.0662973	0.0413920	0.0701564	0.6224140	0.2814500	0.9388900		
PW6	0.0929610	-0.0396979	-0.0631947	0.0477179	-0.0039155	0.3157760	0.3544480	0.2576000	1.0454000	
PW12	0.1060960	-0.0036458	-0.0650136	0.0711061	0.0723696	0.3084440	0.2117840	0.2727460	0.2021830	1.0902600
PW13	0.1463090	-0.1813910	-0.1328240	0.0800114	0.0904781	0.4634090	0.2978650	0.3695790	0.3139490	0.5274650
PW14	0.0651101	-0.0489050	-0.0849772	0.0681483	0.0785949	0.2130890	0.1223070	0.2136480	0.1684860	0.3400090
PW17	0.0354243	-0.0955284	-0.1274720	0.0550136	0.0504744	0.3511200	0.2016220	0.3233210	0.1436490	0.3470480
PW18	0.0096257	-0.1026790	-0.1799100	0.0241286	0.0066639	0.3729150	0.2502010	0.3934330	0.2576600	0.3671720
PW25	0.2076720	0.0023823	-0.0016378	0.1545140	0.1630810	0.3492730	0.2101590	0.2951360	0.2645130	0.2851040
PW28	0.1230130	0.0478507	0.0267161	0.1332300	0.1168280	0.2303680	0.0501345	0.2012540	0.1317130	0.2013550
PW30	0.1796220	-0.0251480	0.0610368	0.1773920	0.1865780	0.5036170	0.1669250	0.5559450	0.2351110	0.2793180
PW35	0.0413445	-0.0412514	-0.0766911	0.0360965	0.0546040	0.3444400	0.2179520	0.3863680	0.1882250	0.4231100
PW44	0.1034560	-0.2095190	-0.1734750	0.0857377	0.1031340	0.4386480	0.2202890	0.3502990	0.2654340	0.4127490
PW56	0.0820074	-0.0810376	-0.1021680	0.0590378	0.0802529	0.3790870	0.1994140	0.3980850	0.2326620	0.3600250

	PW13	PW14	PW17	PW18	PW25	PW28	PW30	PW35	PW44	PW56
PW13	1.2551900									
PW14	0.3822710	0.7151330								
PW17	0.5130580	0.2628590	0.9807650							
PW18	0.4266770	0.3463470	0.4736860	0.8966290						
PW25	0.3532610	0.2358170	0.2597160	0.3158770	0.8167740					
PW28	0.2330280	0.2057450	0.2504690	0.2617120	0.2197170	0.5336050				
PW30	0.3917700	0.2576130	0.3258100	0.4109110	0.3362350	0.3019110	0.8953240			
PW35	0.4472650	0.2936620	0.5346000	0.4622420	0.2504480	0.2930530	0.4205550	0.9454690		
PW44	0.7170610	0.3833770	0.5611790	0.5153920	0.3350150	0.2660060	0.4331390	0.5800830	1.3031000	
PW56	0.4480410	0.3112930	0.4827200	0.4679240	0.2925010	0.2436080	0.3432260	0.4704160	0.5996650	0.8667700

Appendix C
Variance/Covariance Matrix for *CRI* Item "Parcels"/"Packets"

n=499
v=16
COVARIANCE MATRIX TO BE ANALYZED

	P1_1	P1_2	P1_3	P1_4	P2_1	P2_2	P2_3	P2_4	P3_1	P3_2
P1_1	3.8298700									
P1_2	2.8603000	6.5236700								
P1_3	3.0964300	4.3461500	5.7993100							
P1_4	3.1174800	3.9021200	3.8652300	5.8390400						
P2_1	0.9806720	-0.0603681	1.2814600	0.8553810	7.0318000					
P2_2	0.6750190	-0.1186470	0.9980950	0.3643050	3.7290700	4.6507200				
P2_3	1.2617600	0.0014929	1.4078600	1.1047400	5.8217100	4.5062200	8.9394400			
P2_4	0.2995980	-0.6316340	0.3687590	0.0160160	4.2951600	4.4063200	5.9387000	9.1571500		
P3_1	-1.0704000	-0.3732970	-1.0635400	-0.7734670	-4.6196900	-2.8413500	-5.7907900	-3.8988900	13.8201000	
P3_2	-0.4901790	0.6335640	-0.6143690	-0.0952749	-4.1999900	-2.6628700	-5.3364500	-3.6067200	6.7680600	8.0881400
P3_3	-1.3157500	0.1212260	-1.0634100	-0.6954950	-5.6513300	-3.4883000	-7.1458700	-4.7206400	8.9782300	8.2757600
P3_4	-0.8954960	0.0368367	-0.9761490	-0.4291470	-4.7969300	-3.0808600	-6.0788800	-3.7386800	8.4415800	7.3918000
P4_1	-1.0260300	-2.0892900	-1.5533200	-1.8633600	1.2475100	0.5151380	0.9725130	1.3918900	-0.1416640	-1.5449400
P4_2	-1.7501200	-3.0308900	-2.8865800	-2.3617000	0.4629750	-0.0733565	-0.1089000	0.7804140	1.3295500	-0.0454413
P4_3	-2.0385100	-3.5997500	-3.3370400	-3.1013100	0.3853630	0.1951970	-0.2541110	0.9812820	1.2695800	-0.4332080
P4_4	-1.7681000	-3.7095400	-2.8066200	-3.0279200	0.7495600	0.6313580	0.0881643	1.4133500	0.6696730	-0.6776610

	P3_3	P3_4	P4_1	P4_2	P4_3	P4_4
P3_3	12.6228000					
P3_4	9.0774800	11.8643000				
P4_1	-1.4185000	-1.3480900	5.0256200			
P4_2	0.6031850	0.6025250	3.2656300	6.5609400		
P4_3	0.0083178	0.0802287	4.1355300	5.2506200	8.2154000	
P4_4	-0.0415973	-0.3114300	4.1627200	5.0446100	6.4368300	8.5684400

Note. The measured variable item "parcels"/"packets" were created as follows.

```
 470   0  compute p1_52_7 =pw52+pw7
 471   0  compute p1_37_57 =pw37+pW57
 472   0  compute p1_55_15 =pW55+pW15
 473   0  compute p1_36_01 =pW36+pW1
 474   0  compute p1_19_53 =pW19+pW53
 475   0  compute p1_31_46 =pW31+pW46
 476   0  compute p1_24_34 =pW24+pW34
 477   0  compute p1_40 =pW40
 478   0
```

```
479  0  compute p2_27_22 =pW27+pW22
480  0  compute p2_08_42 =pW8+pW42
481  0  compute p2_04_10 =pW4+pW10
482  0  compute p2_11_21 =pW11+pW21
483  0  compute p2_60_26 =pW60+pW26
484  0  compute p2_48_09 =pW48+pW9
485  0  compute p2_38_20 =pW38+pW20
486  0  compute p2_23 =pW23
487  0
488  0  compute p3_58_47 =pW58+pW47
489  0  compute p3_59_45 =pw59+pW45
490  0  compute p3_16_43 =pw16+pW43
491  0  compute p3_33_49 =pw33+pW49
492  0  compute p3_32_39 =pW32+pW39
493  0  compute p3_29_51 =pW29+pW51
494  0  compute p3_50_41 =pW50+pW41
495  0  compute p3_54 =pW54
496  0
497  0  compute p4_14_03 =pW14+pW3
498  0  compute p4_28_06 =pW28+pW6
499  0  compute p4_56_02 =pW56+pW2
500  0  compute p4_25_13 =pW25+pW13
501  0  compute p4_18_05 =pW18+pW5
502  0  compute p4_30_35 =pW30+pW35
503  0  compute p4_12_17 =pW12+pW17
504  0  compute p4_44 =pW44

684  0  compute p1_1= P1_52_7+P1_40
685  0  compute p1_2=P1_37_57+P1_31_46
686  0  compute p1_3=P1_36_01+P1_24_34
687  0  compute p1_4=P1_19_53+P1_55_15
688  0  compute p2_1=P2_27_22+P2_48_09
689  0  compute p2_2=P2_08_42+P2_23
690  0  compute p2_3=P2_04_10+P2_38_20
691  0  compute p2_4=P2_60_26+P2_11_21
692  0  compute p3_1=P3_33_49+P3_50_41
693  0  compute p3_2=P3_59_45+P3_54
694  0  compute p3_3=P3_16_43+P3_58_47
```

```
695  0  compute p3_4=P3_32_39+P3_29_51
696  0  compute p4_1=P4_44+P4_14_03
697  0  compute p4_2=P4_30_35+P4_28_06
698  0  compute p4_3=P4_18_05+P4_25_13
699  0  compute p4_4=P4_56_02+P4_12_17
```